

IN THE CLAIMS:

1-10. (Canceled)

11. (Currently Amended) A method of producing fibroblasts, comprising:
obtaining embryonic stem cells;
culturing the embryonic stem cells to induce formation of embryoid bodies;
isolating the embryoid bodies;
casting the embryoid bodies in a three-dimensional scaffolding material and a cell culture medium, wherein the three-dimensional scaffolding material is a gel; and
growing the embryoid bodies embedded in the three-dimensional scaffolding material and in the cell culture medium, thereby inducing differentiation of the embryoid bodies to produce ~~substantially homogeneous~~ populations of fibroblasts while embedded in the three-dimensional scaffolding material, ~~wherein differentiation occurs without reliance on composition of the cell culture medium.~~

12. (Previously Presented) The method of claim 11, wherein the inducing comprises adding a cytokine to the three-dimensional embryoid body culture.

13. (Original) The method of claim 12, wherein the cytokine is vascular endothelial growth factor (VEGF); vascular permeability factor (VPF); members of the fibroblast growth factor family (FGF); members of the interleukin family (IL-1 α , and -1 β , -2, -3, -4, -5, -6, -7, -8, -9, -10, -11, -12, -13, -14, -15, -16, -17 or -18); epidermal growth factor (EGF); platelet-derived growth factor (PDGF); platelet-derived endothelial cell growth factor (PD-ECGF); transforming growth factors alpha and beta (TGF- α , TGF- β); tumor necrosis factor alpha (TNF α); hepatocyte growth factor (HGF); granulocyte-macrophage colony stimulating factor (GMCSF); insulin growth factor-1 (IGF-1); angiogenin; angiotropin; fibrin, nicotinamide; macrophage inflammatory protein (MIP); macrophage migration inhibiting factor (MIF); granulocyte stimulating factor (GCSF); macrophage stimulating factor (MCSF); endothelial cell growth factor (ECGF); members of the interferon family (IFNs); members of the insulin-like growth factor family (IGF-I

and IGF-II); nerve growth factor (NGF); members of the neurotrophin family (NTs); members of the selectin family; intercellular adhesion molecule (ICAM); platelet vascular cell adhesion molecule (PECAM); vascular cell adhesion molecule (VCAM); calcitonin, mediators, hormones or hirudin.

14. (Original) The method of claim 13, wherein the cytokine is transforming growth factor beta (TGF- β); fibroblast growth factor (FGF); or interleukin 4 (IL-4).

15. (Previously Presented) The method of claim 12, wherein the inducing further comprises adding a cell culture medium comprising about 2% fetal bovine serum.

16. (Previously Presented) The method of claim 11, further comprising:
extracting the fibroblasts from the three-dimensional scaffolding material; and
culturing the fibroblasts in monolayer culture.

17. (Previously Presented) The method of claim 16, wherein the extracting is performed by digesting the three-dimensional scaffolding material and by centrifugation.

18. (Previously Presented) The method of claim 16, wherein the monolayer culture includes about 10% fetal bovine serum.

19. (Previously Presented) The method of claim 12, wherein the inducing includes adding FGF, TGF-b1 or IL-4 to the medium.

20. (Previously Presented) The method of claim 11, wherein the inducing differentiation is influenced by the embryoid bodies being embedded in the three-dimensional scaffolding material.

21-22. (Canceled)

23. (New) The method of claim 11, wherein inducing differentiation occurs without reliance on presence of a cytokine.

24. (New) The method of claim 11, wherein inducing differentiation produces substantially homogenous populations of fibroblasts.